AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A flow sensor for detecting flow of fluid, the sensor comprising: a thin film portion~~, wherein the thin film portion includes~~ including a heater and a detector for detecting temperature around the heater, ~~and~~

wherein the heater is made of semiconductor;

the thin film portion includes a passivation film for covering the heater;

the heater consumes an electric power so that the sensor detects the flow on the basis of the electric power consumed in the heater;

the heater includes a thermal conduction member made of heat conductive material, a heat conductivity of which is higher than that of the passivation film; and

the thermal conduction member does not flow current.

2. (original) The sensor according to claim 1,

wherein the heater is made of semiconductor having P type conductivity, and has a width in a range between 7 μm and 80 μm.

3. (original) The sensor according to claim 2,

wherein the width of the heater is equal to or larger than 15 μm.

4. (original) The sensor according to claim 1,

wherein the heater includes a plurality of line heaters, which are connected together in series, and

wherein the line heater flows current in a direction, which is opposite to a direction of current flowing in a neighboring line heater.

5. (original) The sensor according to claim 1,

wherein the detector is made of semiconductor having P type conductivity, and has a width in a range between 7 μm and 80 μm.

6. (original) The sensor according to claim 5,

wherein the width of the detector is equal to or larger than 15 μm.

7. (original) The sensor according to claim 1,

wherein the detector includes a plurality of line detectors, which are connected together in series, and

wherein the line detector flows current in a direction, which is opposite to a direction of current flowing in a neighboring line detector.

8. (original) The sensor according to claim 2,

wherein the semiconductor having P type conductivity is a boron doped

silicon.

9. (original) The sensor according to claim 8,

wherein the semiconductor having P type conductivity has an impurity concentration being equal to or larger than $1X10^{20}cm^{-3}$.

10. (canceled)

11. (currently amended) The sensor according to claim ~~10~~1,

wherein the thermal conduction member is insulated with the passivation film electrically.

12. (currently amended) The sensor according to claim ~~10~~1,

wherein the thermal conduction member connects to the heater at one portion with a thermal connection, a heat conductivity of which is higher than that of the passivation film.

13. (currently amended) The sensor according to claim ~~10~~1,

wherein the thermal conduction member directly connects to the heater, and extends toward a direction perpendicular to a longitudinal direction of the heater.

14. (currently amended) The sensor according to claim ~~10~~1,

wherein the heater is made of silicon.

15. (original) The sensor according to claim 14,

wherein the heater is made of boron doped silicon, and has a width being equal to or larger than 7 μm.

16. (original) The sensor according to claim 15,

wherein the width of the heater is equal to or larger than 15 μm.

17. (original) The sensor according to claim 14,

wherein the heater is made of poly crystalline silicon.

18. (original) The sensor according to claim 17,

wherein the heater is made of phosphorous doped poly crystalline silicon.

19. (original) The sensor according to claim 18,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $2X10^{20}$ cm^{-3}.

20. (original) The sensor according to claim 19,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $7X10^{20}cm^{-3}$.

21. (currently amended) The sensor according to claim ~~10~~1,

wherein the thermal conduction member is disposed nearby the heater, and both ends of the thermal conduction member connect to the heater through a pair of thermal connections having electric conductivity,

wherein the thermal conduction member has one contact point for connecting one thermal connection, and has the other contact point for connecting the other thermal connection, and

wherein the one contact point has electric potential being equal to that of the other contact point.

22. (original) The sensor according to claim 21,

wherein the heater is made of silicon.

23. (original) The sensor according to claim 22,

wherein the heater is made of boron doped silicon, and has a width being equal to or larger than 7 μm.

24. (original) The sensor according to claim 23,

wherein the width of the heater is equal to or larger than 15 μm, the width being disposed in a direction perpendicular to a current flow direction of the heater.

25. (original) The sensor according to claim 22,

wherein the heater is made of poly crystalline silicon.

26. (original) The sensor according to claim 25,

wherein the heater is made of phosphorous doped poly crystalline silicon.

27. (original) The sensor according to claim 26,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $2X10^{20}cm^{-3}$.

28. (original) The sensor according to claim 27,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $7X10^{20}cm^{-3}$.

29. (currently amended) The sensor according to claim ~~10~~1,

wherein the thermal conduction member is made of the same material as that of the heater.

30. (currently amended) The sensor according to claim ~~10~~1,

wherein the heater is made of silicon, and the thermal conduction member is made of silicon.

31. (original) The sensor according to claim 30,

wherein the heater is made of poly crystalline silicon.

32. (original) The sensor according to claim 31,

wherein the heater is made of phosphorous doped poly crystalline silicon.

33. (original) The sensor according to claim 32,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $2X10^{20}cm^{-3}$.

34. (original) The sensor according to claim 33,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $7X10^{20}cm^{-3}$.

35. (original) The sensor according to claim 30,

wherein the heater includes a plurality of line heaters, which are connected together in series, and wherein the line heater flows current in a direction, which is

opposite to a direction of current flowing in a neighboring line heater.

36. (original) The sensor according to claim 1,

wherein the heater is made of boron doped silicon, and has a narrow portion,

wherein the narrow portion narrows a width of the heater in a direction perpendicular to a current flow direction of the heater so that the narrow portion limits the current flowing in the heater, and

wherein the narrow portion has a minimum width being equal to or larger than 7 μm.

37. (original) The sensor according to claim 36,

wherein the minimum width of the narrow portion is equal to or larger than 15 μm.

38. (original) The sensor according to claim 1,

wherein the heater includes a plurality of line heaters connecting together in parallel, and

wherein each line heater is made of boron doped silicon, and has a width being equal to or larger than 7 μm.

39. (original) The sensor according to claim 38,

wherein the width of the line heater is equal to or larger than 15 μm.

40. (original) The sensor according to claim 1, further comprising:

a lead wire connecting to the heater for supplying electric power to the heater,

wherein the heater is provided by a resistor,

wherein the resistor and the lead wire are made of semiconductor film, and

wherein the resistor is locally thinned.

41. (original) The sensor according to claim 40,

wherein the detector is provided by another resistor.

42. (original) The sensor according to claim 41,

wherein part of the heater and the detector disposed in a region projected in a flow direction of the fluid is thinned.

43. (original) The sensor according to claim 42,

wherein the heater and the detector are provided as a non-insulated region, which is disposed in a partially insulated semiconductor film by heat treatment.

44. (original) The sensor according to claim 43,

wherein the heat treatment is a thermal oxidation.

45. (original) The sensor according to claim 1, further comprising:

a passivation film,

wherein at least one of the heater and the detector is made of a semiconductor resistor,

wherein the passivation film covers the heater and the detector, and

wherein the semiconductor resistor has a surface covered with a thermal oxidation film.

46. (original) The sensor according to claim 45,

wherein the surface of the semiconductor resistor is performed with thermal oxidation so as to form the thermal oxidation film.

47. (original) The sensor according to claim 1, further comprising:

a passivation film,

wherein the passivation film covers at least one surface of the heater and the detector, one surface being disposed in a passage of the fluid, and

wherein the passivation film is made of silicon nitride film having silicon rich composition, in which a ratio of silicon to nitrogen is larger than that in a

stoichiometric composition.

48. (original) The sensor according to claim 47,

wherein the silicon nitride film is formed with using a thermal chemical vapor deposition method.

49. (original) The sensor according to claim 47,

wherein the passivation film has a refractive index between 2.1 and 2.3.

50. (original) The sensor according to claim 47,

wherein the passivation film has a thickness being equal to or larger than 0.6 μm.

51. (original) The sensor according to claim 47,

wherein the thin film portion has a thickness being equal to or larger than 2.0 μm.

52. (original) The sensor according to claim 47,

wherein the thin film portion has a thickness being equal to or smaller than 5.0 μm.

53. (original) The sensor according to claim 47, further comprising:

an insulation film,

wherein the insulation film covers the other surface of the heater and the detector, the other surface being disposed opposite to the one surface, and

wherein the insulation film is made of silicon nitride film having silicon rich composition, in which a ratio of silicon to nitrogen is larger than that in a stoichiometric composition.

54. (original) The sensor according to claim 53, further comprising:

another passivation film made of silicon oxide film; and

another insulation film made of silicon oxide film,

wherein the another passivation film has a thickness, and the another insulation film has another thickness so that a total thickness thereof is defined as α,

wherein the passivation film has a thickness, and the insulation film has another thickness so that a total thickness thereof is defined as β,

wherein the total thickness α and the total thickness β have a following relationship as:

$$\left(\beta / \alpha+\beta\right) - 2.7 \cdot \exp\{-0.5 \cdot (\alpha+\beta)\} > 0 \text{, and}$$

wherein the thickness α is positive.

55. (original) The sensor according to claim 54,

wherein the another insulation film is disposed on the insulation film, the heater and the detector are disposed on the another insulation film, the another passivation film is disposed on the heater and the detector, and the passivation film is disposed on the another passivation film.

56. (original) The sensor according to claim 47, further comprising:

another passivation film made of silicon oxide film;

an insulation film made of silicon oxide film,

wherein the another passivation film has a thickness, and the insulation film has another thickness so that a total thickness thereof is defined as α,

wherein the passivation film has a thickness defined as β,

wherein the total thickness α and the thickness β have a following relationship as:

$\left(\beta / \alpha+\beta\right) - 4.0 \cdot \exp\{-0.7 \cdot (\alpha+\beta)\} > 0$, and wherein the thickness α is positive.

57. (original) The sensor according to claim 47, further comprising:

a semiconductor substrate having a concavity,

wherein the thin film portion is disposed on the concavity as a bridge

portion,

wherein the thin film portion has two edges disposed in a longitudinal direction of the detector, and

wherein the two edges are covered with a reinforcing film disposed on the same layer as the detector.

58. (original) The sensor according to claim 57,

wherein the reinforcing film is made of the same material as the detector.

59. (original) The sensor according to claim 57,

wherein the reinforcing film and the detector are made of poly crystalline silicon.

60. (original) The sensor according to claim 57,

wherein the reinforcing film and the detector are made of single crystal silicon.

61. (currently amended) A method for manufacturing a flow sensor according to claim 1, the method comprising the steps of:

forming the thin film portion with using a silicon substrate, ~~and~~

forming the heater and the detector in the thin film portion~~.~~,

<u>forming the passivation film in the thin film portion, and</u>

<u>forming the thermal conduction member in the heater.</u>

62. (original) The method according to claim 61,

wherein the heater is made of semiconductor having P type conductivity, and has a width in a range between 7 μm and 80 μm.

63. (original) The method according to claim 61,

wherein the detector is made of semiconductor having P type conductivity, and has a width in a range between 7 μm and 80 μm.

64. (original) The method according to claim 62,

wherein the heater is made of boron doped single crystal silicon.

65. (original) The method according to claim 64,

wherein the boron doped single crystal silicon has a boron concentration being equal to or larger than $1X10^{20}cm^{-3}$.

66. (original) The method according to claim 62,

wherein the heater is made of phosphorous doped poly crystalline silicon.

67. (original) The method according to claim 66,

wherein the phosphorous doped poly crystalline silicon has a phosphorous concentration being equal to or larger than $2X10^{20}cm^{-3}$.

68.-81. (canceled)